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27 March 2006

Yi-Tso Jeff Chen, AIA
McGinnis Chen Associates Inc
10 Nottingham Place
San Francisco, CA 94133

Project 060230 – Spandrel Glass Surface Stress Measurements, 250 N Street, Sacramento, CA

Dear Mr. Chen

As you requested I visited the above named site with Tammy Siliznoff (SGH San Francisco) on 25 March and met with you and Jeff Martin. We measured the residual surface compressive stress (RSCS) on a number of lites of spandrel glass and on samples provided by you.

We measured the RSCS in accordance with the methods described by ASTM C1279 using a grazing angle surface polarimeter (laser GASP by Strainoptic Technologies). On each lite we measured, we made two measurements, vertical and horizontal. We initially attempted to measure the RSCS on the frit (inside surface) of the spandrel glass by removing the frit with a disc sander. We were unable to get readings on the frit side of the glass, including attempts on the samples you provided. We determined that the outside surface of the spandrel glass is the tin side using an ultraviolet lamp. We measured the surface RSCS in the outside surface of the three samples you provided, 20 spandrel glass panels on the building, and in a broken shard of spandrel glass that we found in the parking lot. The following table lists our findings.

Test No.	Elevation	Floor	Window number (from left end of elev. As viewed from outside)	RSCS (psi) Horizontal	RSCS (psi) Vertical
A	Shards provided by Mr. Chen		Sample 1	9364	8685
B			Sample 4	8370	8370
C			Sample 5	10970	10970
1	South	4	2	nr	nr
2	South	4	11	nr	nr
3	South	23	22	9364	9015
4	South	23	16	7783	7509
5	South	23	7	10533	9732
6	North	23	22	9364	9732
7	North	23	16	9364	9732
8	North	23	6	9015	9364
9	West	23	17	9732	9732
10	West	23	13	10120	10120
11	West	23	7	9732	10120
12	East	23	9	9732	9364

Test No.	Elevation	Floor	Window number (from left end of elev. As viewed from outside)	RSCS (psi) Horizontal	RSCS (psi) Vertical
13	East	23	14	9732	9364
14	East	23	19	8685	9364
15	West	3	3 from door	9364	9015
16	West	3	6 from door	9364	9732
17	West	3	8 from door	10120	10533
18	West	3	10 from door	9015	9732
19	South	3	2	8370	9364
20	South	3	4	10533	9732
21	South	3	Shard found in lot	10970	10970
22	South	3	15	9364	8685
23	South	3	23	8370	9364

nr – No reading, attempted to read the frit side of the glass.

All of the glass we measured including 20 spandrel lites on the building, 3 samples provided by you, and a shard found in the parking lot have RSCS in the range of 7,509 psi to 10,533 psi. We did not measure any glass with RSCS indicating annealed glass.

Sincerely yours,

Arthur G. Davies Jr., Sr. Staff Engineer
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cc: Thomas A. Schwartz